

DRAFT

TOTAL MAXIMUM DAILY LOADS
FOR ORGANOCHLORINE COMPOUNDS
(DDT, CHLORDANE, TOXAPHENE, PCBs)

IN SAN DIEGO CREEK,
UPPER AND LOWER NEWPORT BAY

ORANGE COUNTY, CALIFORNIA

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

SANTA ANA REGION (8)

This page intentionally left blank.

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	WATERSHED BACKGROUND.....	1
1.1.1	<i>Land Use</i>	2
1.1.2	<i>Climate</i>	3
1.1.3	<i>Hydrology</i>	3
1.1.4	<i>Water Quality</i>	4
2.0	PROBLEM STATEMENT.....	5
2.1	RELEVANT INVESTIGATIONS/AVAILABLE DATA.....	6
2.2	WATER QUALITY STANDARDS.....	8
2.2.1	<i>Beneficial Uses</i>	9
2.2.2	<i>Numeric Water Quality Objectives</i>	9
2.2.3	<i>Narrative Water Quality Objectives</i>	9
2.2.4	<i>Antidegradation Policy</i>	9
2.3	IMPAIRMENT ASSESSMENT	12
2.3.1	<i>USEPA Methodology</i>	12
2.3.2	<i>SARWQCB Methodology</i>	12
2.3.3	<i>Data Evaluated in this Impairment Assessment</i>	14
2.3.4	<i>Pollutant Concentrations in Water (Section 3.1 of the Policy)</i>	15
2.3.5	<i>Pollutant Concentrations in Fish Tissue (Section 3.5 of the Policy)</i>	15
2.3.6	<i>Water/Sediment Toxicity (Section 3.6 of the Policy)</i>	17
2.3.7	<i>Indirect Effects due to Bioaccumulation and Food Web Biomagnification</i>	20
2.4	RESULTS AND DISCUSSION.....	20
2.4.1	<i>San Diego Creek and Tributaries</i>	22
2.4.2	<i>Upper and Lower Newport Bay</i>	23
2.4.3	<i>Comparison with USEPA (2002) Impairment Findings</i>	25
3.0	NUMERIC TARGETS.....	29
3.1	WATER COLUMN TARGETS	29
3.2	SEDIMENT TARGETS	29
3.2.1	<i>Selection of sediment targets from literature values that were empirically derived based on statistical evaluation of effects/no effects toxicity data sets</i>	29
3.2.2	<i>Back-calculation of sediment targets from CTR using empirically-derived water-sediment ratios (WSRs)</i>	32
3.2.3	<i>Back-calculation of sediment targets from CTR using equilibrium partitioning (EqP)</i>	32
3.2.4	<i>Calculation of sediment targets using BSAFs</i>	34
3.3	FISH TISSUE TARGETS	34
3.3.1	<i>Targets for Human Health Protection</i>	34
3.3.2	<i>Targets for Protection of Aquatic Life and Wildlife</i>	35
3.4	CONCLUSIONS	36
4.0	SOURCE ANALYSIS AND EXISTING LOADS.....	39
4.1	PHYSICOCHEMICAL PROPERTIES AND HISTORIC USES	39
4.1.1	<i>Physical and Chemical Properties</i>	39
4.1.2	<i>Historical Uses and Environmental Fate</i>	41

TABLE OF CONTENTS (CONTINUED)

4.2	SOURCES.....	45
	4.2.1 <i>Point Sources</i>	46
	4.2.2 <i>Nonpoint Sources</i>	52
	4.2.3 <i>Background Sources</i>	54
4.3	EXISTING LOADS.....	56
	4.3.1 <i>San Diego Creek</i>	56
	4.3.2 <i>Upper and Lower Newport Bay</i>	58
5.0	LINKAGE ANALYSIS AND LOADING CAPACITY	63
5.1	LINKAGE ANALYSIS	63
5.2	LOADING CAPACITIES.....	64
	5.2.1 <i>San Diego Creek</i>	64
	5.2.2 <i>Upper and Lower Newport Bay</i>	64
6.0	TMDLS, LOAD ALLOCATIONS, AND MARGIN OF SAFETY	67
7.0	SEASONAL VARIATION AND CRITICAL CONDITIONS	73
8.0	IMPLEMENTATION PLAN	
9.0	REFERENCES	